

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT



To:

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WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing
(day/month/year)

20. 4. 2004

Applicant's or agent's file reference

CFO17900WO

FOR FURTHER ACTION

See paragraph 2 below

International application No.

PCT/JP2004/001431

International filing date (day/month/year)

10.02.2004

Priority date (day/month/year)

14.02.2003

International Patent Classification (IPC) or both national classification and IPC

Int.Cl.⁷ **H01L 27/146, G01T 1/24, H01L 29/786, H04N 5/32, H04N5/335**

Applicant

CANON KABUSHIKI KAISHA

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/JP

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4L 3035

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2004/001431

Box No. I Basis of the opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This opinion has been established on the basis of a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).

2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

- ☐ a sequence listing
☐ table(s) related to the sequence listing

b. format of material

- ☐ in written format
☐ in computer readable form

c. time of filing/furnishing

- ☐ contained in the international application as filed.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International Application No.

PCT/JP2004/ 001431

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	<u>4, 5, 7, 8, 10</u>	YES
	Claims	<u>1, 2, 3, 6, 9</u>	NO
Inventive step (IS)	Claims	<u>4, 5</u>	YES
	Claims	<u>1-3, 6-10</u>	NO
Industrial applicability (IA)	Claims	<u>1-10</u>	YES
	Claims		NO

2. Citations and explanations

D1:US 2001/0022363 A1(Hisashi Nagata)2001.09.20
D2:JP 2002-368202 A(CANON KABUSHIKI KAISHA)2002.12.20
D3:JP 2002-124655 A(CANON KABUSHIKI KAISHA)2002.04.26
D4:JP 2-260460 A (CASIO COMPUTER CO.,LTD.)1990.10.23
(Claim1,2,3)

The following invention is described in D1 (see [column 83 to column 94, Fig 2]). A photodetecting device(14,16,17) is formed over a switching element(1) and the switching element(1) is a dual-gate transistor comprising a gate electrode(6), a gate insulating film (7), a semiconductor layer(8), n+-Si layer(9), A transparent layer (11), a dielectric layer(22), and a transparent layer(14a) which functions as a top gate of dual-gate transistor. Therefor the subject matter of claims 1,2,3 does not appear to be novel with respect to D1.

(Claim 6)

The following invention is described in D1(see [column 91 ,Fig1]).A transparent layer(14a) is extended from a pixel electrode(14). Therefor the subject matter of claim 6 does not appear to be novel with respect to D1.

(Claim 7)

The following invention is described in D2 (see [column 33 to column 35 ,Fig 1]). A photodetecting device is constructed by an insulating layer(103), a semiconductor layer(104) and a n+-layer(105). So it is perceived that a person skilled in the art could have easily made the invention in claim 7 of the present application by applying the technique of D2 to the invention of D1.

(Claim 8)

The following invention is described in D3(see [column 21 ,Fig 9]). A photodetecting device is constructed by a p-layer(103), a semiconductor layer(104), and a n-layer(105). So it is perceived that a person skilled in the art could have easily made the invention in claim 8 of the present application by applying the technique of D3 to the invention of D1.

(Claim 9)

The following invention is described in D1 (see [column 5 ,Fig 6]). A conversion layer(6) is provided for converting an X-ray into electric charge. Therefor the subject matter of claim 9 does not appear to be novel with respect to D1.

(Claim 10)

The following invention is described in D3 (see [column 21 ,Fig 9]). A wavelength converter(107) is arranged onto a photodetecting device. So it is perceived that a person skilled in the art could have easily made the invention in claim 10 of the present application by applying the technique of D3 to the invention of D1.

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of: V. 2

(Claim 4,5)

The subject matter of claims 4,5 is neither disclosed in D1,D2,D3 and D4 nor obvious to a person skilled in the art.